

# TACOSOL CIRC ZR PV EU21

TWO-LINE SOLAR STATION WITH HIGH-EFFICIENCY DC PUMP



## ADVANTAGES

- Compact:** Equipped with all the necessary valves and components
- Secure:** Intrinsic safety of the system thanks to an integrated safety sub-assembly
- Simple:** Hydraulic balancing and functional checking of the system with TacoSetter Inline 130 Pump can be changed with ease as it lockable on the intake and output sides
- Efficient:** Highly efficient system operation owing to permanent air separation and use of HE pumps
- Flexible:** Flexibility thanks to the option of integrating control systems

Two-line solar station with 24V HE DC pump, balancing valve, ventilation unit and safety subassembly for independent operation in solar heating energy systems

## DESCRIPTION

The TacoSol Circ ZR PV EU21 is a solar station with a high-efficiency DC pump, which can be powered and controlled directly by the current of a photovoltaic panel. This eliminates the otherwise customary mains connection and enables independent operation of the solar system. Hydraulic balancing, flow measurement and ventilation can be carried out directly on the station. The integrated TacoSetter Inline 130 allows the volume flow in the primary circuit to be precisely and conveniently adjusted and checked. Permanent air separation in the ventilating flask

allows energy-efficient operation of the system.

Systems that are correctly balanced hydraulically and air-free guarantee optimal energy extraction and are thus more cost-effective in the sense of the energy-saving directives laid down by law.

Using scales that are pre-calibrated for inhibitors, specialists locally can adjust and check the flow values. Training and costly measuring devices are no longer needed.

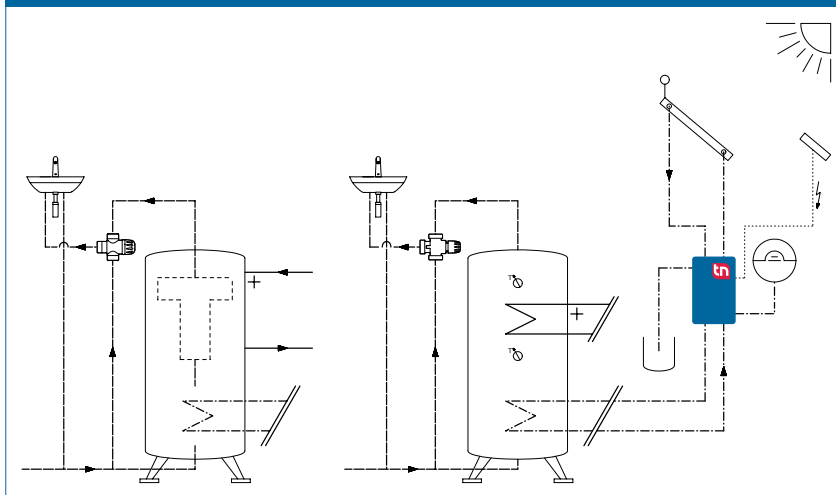
## INSTALLATION POSITION

The solar station must be installed vertically to ensure that the ventilation unit functions correctly. Installation and ventilation can be performed by a single installer.

## OPERATION

The solar liquid heated in the collector is transported to the hot water/drinking water storage tank via a heat exchanger in the two-line TacoSol Circ ZR PV EU21 solar station. The output of the integrated high-efficiency DC pump is regulated independently in combination with a photovoltaic panel based on the intensity of the global radiation and the voltage generated in the photovoltaic module. A DC controller can be installed between the photovoltaic module and the pump to monitor the temperature differential. The integrated TacoSetter Inline 130 balancing valve enables the volume flow to be adjusted to the performance of the collector or heat exchanger and checked. The integrated ventilating flask with innovative flow technology design ensures permanent air separation and thereby increases the efficiency of the system.

## SYSTEM/BASIC DIAGRAM



# TACOSOL CIRC ZR PV EU21 | TWO-LINE SOLAR STATION WITH HIGH-EFFICIENCY DC PUMP

## SPECIFICATION TEXT

See [www.taconova.com](http://www.taconova.com)

## TECHNICAL DATA

### General

- Max. operating temperatures:
  - Flow line (ventilator side):  
 $T_{0\max}$ : 160 °C
  - Return line (pump side):  
 $T_{0\max}$ : 95 °C
- Max. operating pressure:  
 $P_{0\max}$ : 8 bar
- Actuating pressure of the integrated safety valve: 6 bar
- $k_{VS}$  value and measurement range according to „Type overview“ table
- Thread according to DIN 2999/ISO 7 and ISO 228
- Measuring accuracy  $\pm 10\%$  of the final value

### Material

- Vent pipe: Painted steel
- Valve housing: Brass
- Internal parts: Stainless steel, brass, plastic; borosilicate (sight glass)
- O-ring seals: EPDM
- Flat seals: AFM34
- Insulation: EPP

### Electric connection data

- Rated voltage 8 - 24 Volt (operation via a 12 V panel; with a 24 V panel only with maximum voltage limit of 24 V)
- Power consumption\*:
  - Minimal start-up power less than 1 Watt (at 12 Volt)
  - Maximum power input approx. 22 W; current consumption 0.25 - 1.46 A (\* power input and start-up may vary from system to system)
- Insulation class IP 42 / Class F

### Fluids

- Water mixtures with typical additives used against corrosion and freezing (display scale for medium viscosity  $\nu = 2,3 \text{ mm}^2/\text{s}$ )
- Heating water (VDI 2035; SWKI BT 102-01; ÖNORM H 5195-1)
- Cold water

### Note

Safe power-off of the pump at approx. 95 °C

## TYPE OVERVIEW

### TacoSol Circ ZR PV EU21 | Two-line solar station

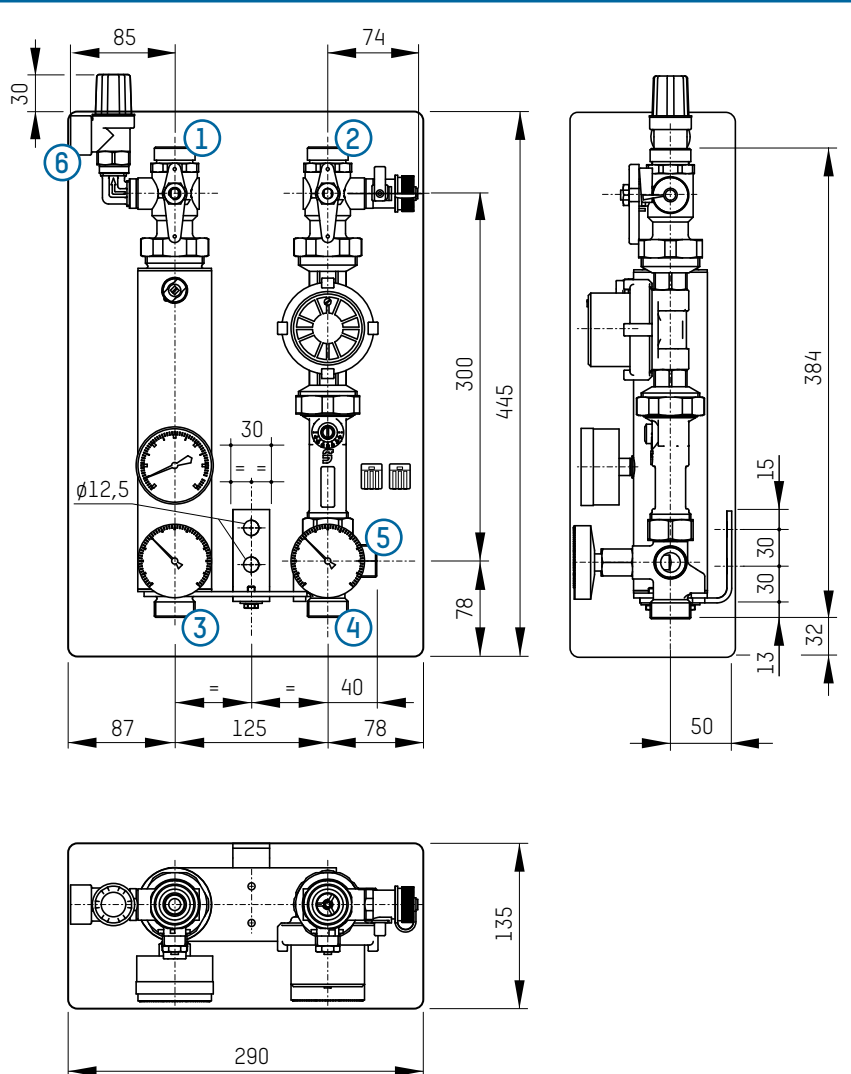
Order no.	$k_{VS}^{1)}$	$k_{VS}^{2)}$	Measuring range <sup>3)</sup>	Circulating pump
270.7506.000	1,5	6,1	1,5 – 6,0 l/min	Laing D5 Solar
270.7516.000	3,3	6,0	4,0 – 16,0 l/min	Laing D5 Solar

<sup>1)</sup>  $k_{VS}$  [m³/h] at  $\nu = 1 \text{ mm}^2/\text{s}$  in the return line (pump side)

<sup>2)</sup>  $k_{VS}$  [m³/h] at  $\nu = 1 \text{ mm}^2/\text{s}$  in the flow line (ventilator side)

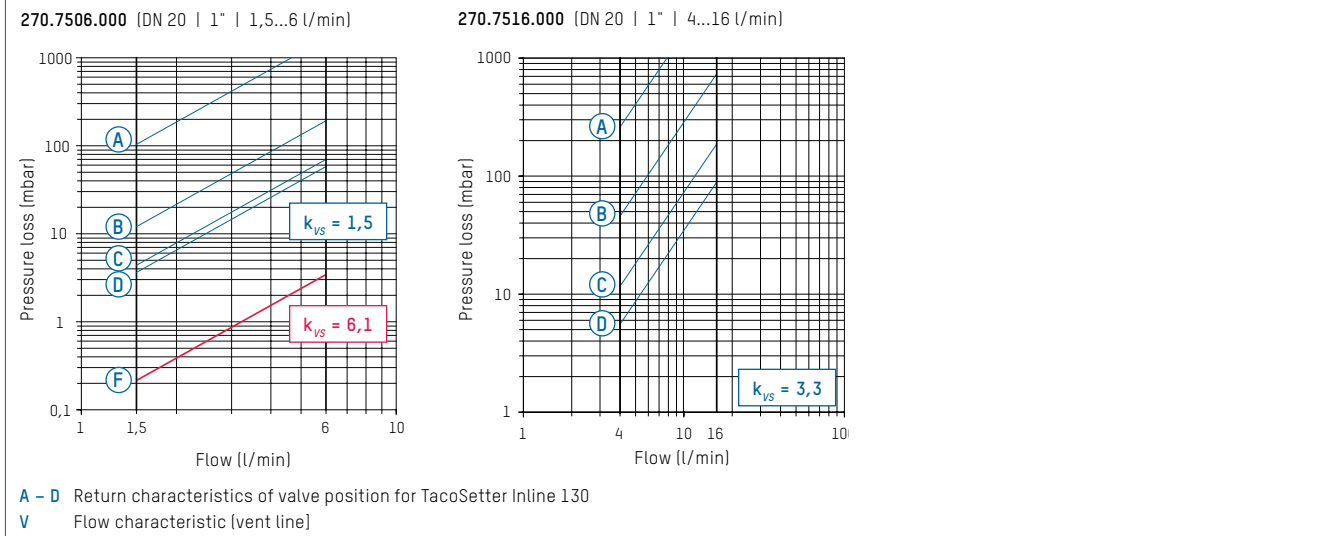
<sup>3)</sup> Reading scale for water-glycol mix with  $\nu = 2,3 \text{ mm}^2/\text{s}$

## DIMENSIONAL DRAWING



- 1 Connection of collector flow (AG ISO 228, G 1" flat sealing and cutting ring)
- 2 Connection of collector return (AG ISO 228, G 1" flat sealing and cutting ring)
- 3 Connection of storage flow (AG ISO 228, G 1" flat sealing and cutting ring)
- 4 Connection of storage return (AG ISO 228, G 1" flat sealing and cutting ring)
- 5 Connection of expansion vessel (AG ISO 228, G ¾" flat sealing and cutting ring)
- 6 Connection of safety valve drainage line (IG DIN 2999 / ISO 7, Rp ¾")

**PRESSURE LOSS DIAGRAMS**



**COMPONENTS**

**3 Manometer**

- Display range 0 - 10 bar

**4 Thermometer**

- Display range 0 - 160 °C
- Dipping sensors installed in the safety pipe

**5 Wall mounting**

**6 Shutoff ball valve with integrated backflow preventer as well as filling and draining valve (KFE)**

- Multifunctional valve for filling, draining and shutting off the collector circuit
- Hose connection outer thread G 3/4"
- Option of lead sealing to protect against incorrect operation by the handle

**7 Circulation pump Laing D5**

- DC 8 - 24 V
- Impeller mounted on ultra-hard ceramic ball
- Delivery pressure 2.8 m

**8 TacoSetter Inline 130 balancing valve**

- Sight glass with scale for medium viscosity of = 2,3 mm<sup>2</sup>/s
- Setting ranges in accordance with design 1.5 - 6 l/min | 4 - 16l/min | 8 - 28 l/min
- Integrated shut-off function
- Hydraulic balancing of pump group without correction curves and measuring devices
- Functional checking of system at sight glass

**9 Connection terminals Wago**

- Electrical connection to the photo-voltaic panel

**10 Thermometer**

- Display range 0 - 160 °C
- Dipping sensors installed in the safety pipe

**11 Expansion vessel connection**

- G 3/4"

**Insulation and mounting accessories**

- 2 hexagon wood screws 8 x 50 mm
- 2 washers
- 2 mounting pins 10 x 50 mm
- Installation instructions
- Operating and safety instructions

**1 Shutoff ball valve with safety valve and integrated backflow preventer**

- Integrated backflow preventer and check valve
- Option of lead sealing to protect against incorrect operation by the handle
- Safety valve function in each ball valve position guaranteed in accordance with safety standards.

**2 Ventilating flask with ventilating valve**

- Permanent air separation
- Air collection volume 2.5 dl
- Integrated manual air vent for ventilating and checking the leak tightness

ACCESSORIES



**SOLDER JOINT PRESSURE FITTING**

Flat sealing connector joint, consisting of a soldered connecting nipple, lock nut and flat seal suitable for solar technology

Order no.	G x mm	Version for
210.5331.019	1" x 18 mm	Copper pipe 18 mm
210.5332.019	1" x 22 mm	Copper pipe 22 mm



**FILL AND DRAIN COCK 3WAY CONNECTOR**

For connection to the expansion vessel connector piece, consisting of a T-joint with fill and drain cock, lock nut with G 3/4" inner thread with flat seal suitable for solar technology and G 3/4" outer thread connector.

Order no.	DN	G
296.7001.354	20	3/4"



**EXPANSION VESSEL MOUNTING BRACKET WITH QUICK ACTION COUPLING**

For mounting the expansion vessel on the wall with quick-action shut-off coupling. 1 x inner thread, 1 x outer thread G 3/4".

Order no.	DN	G
296.7002.000	20	3/4"



**STAINLESS STEEL TUBE**

For connecting the expansion vessel, incl. 3/4" lock nut and flat seals suitable for solar technology.

Order no.	DN	G	Length
296.7003.000	20	3/4"	0,5 m



**PV PANEL**

Including mounting material

Order no.	Output voltage	Size
298.5030.000	16 W (peak)	1210 x 155 mm



**DC CONTROL**

Including two temperature sensors (PT1000) and a potential equalization cable

Order no.	Operating power	Size
296.7014.362	5-24 V DC	56 x 33 mm